

Abstract of the Disclosure

A bearing having bearing elements made of Type 60 Nitinol made by an investment casting process for producing near net shape parts of Nitinol includes making a ceramic mold having a series of spherical cavities, pouring molten Nitinol into the mold cavities, cooling the mold and the Nitinol in the cavities to produce solidified Nitinol balls, and breaking the mold away from the Nitinol balls. Nitinol rods for roller bearings can be made by conventional casting directly from the crucible in a draw-down oven. The bars are hot machined or hot rotary swaged and then centerless ground and laser cut to length, or are first cut to length and then centerless ground individually for crowned roller elements. The balls are broken or cut from the risers, leaving the gates attached, and are consolidated by heating under pressure in a hot isostatic press, then ground to the desired size. The balls or rollers are polished, then treated to create an integral ceramic finish. They are then repolished to produce an extremely smooth finish. The balls can also be cut from a sheet or plate of the ball material as cubes or cylinders and processed in an abrasive tumbler to round off the corners and edges, and the rounded cubes or cylinders can then be ground to spherical form in a conventional ball grinder.